NSF Highlights

Search terms: 2010, SBE/SMA, Directorate approved,
AC/GPA Version displayed.

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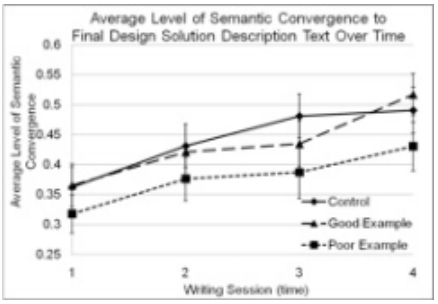
Stimulating Creative Insight - A Cohesive Model of Design Innovation Across Individuals

Highlight ID: 20615, Version: AC/GPA

Innovation occurs within the minds of designers, within design teams, and within computational design engines, each having functional similarities. Cagan and Kotovsky examined how engineering design teams converge to a common understanding of a design problem and its solution, how that is influenced by the information given to them before problem solving, and how it is correlated with quality of produced solutions.

Introducing an example of a good baseline solution to a design team had no effect on how quickly the team converged to a solution, but did lead to higher quality solutions. This may have implications for design team performance in practice.

This research advances our understanding of how teams work. The model posits that team members collaborate to develop a common representation within which a solution is found. The individual's representations influence other group members' representations and contribute to the overall group representation, and group discussions stimulate changes to both the individual and effective group representation, the group inputs acting as the external environmental stimuli to overcome impasses. Individuals then work with and develop their own representation, and at times collaborate with the group to both challenge and expand the group's representation as they search for solutions to the design task.



Level of semantic convergence to final design solution

Credit: Jonathan Cagan and Kenneth Kotovsky

Image Provided by: cagan@cmu.edu

Form 1515

Primary Strategic Outcome Goal: Discovery

- Social, Behavioral, and Economic Research

Secondary Strategic Outcome Goals:

What is the intellectual merit of this activity?

Understanding how groups of individuals, with different ideas, are impacted by external stimuli as they resolve their ideas into a common solution will lend insight into more effective team problem solving strategies.

What are the broader impacts of this activity?
Merit Review Broader Impacts Criterion: Representative Activities, July 2007

- *How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc?)*
- *What may be the benefits of the proposed activity to society?*
- *Will the results be disseminated broadly to enhance scientific and technological understanding?*

The Ph.D. candidate involved in this work, Katherine Fu, is female.

Benefits to Society: If more effective group problem solving strategies result from this work, then there would be many positive benefits to how teams in industry, government and social organizations approach challenging problems.

The results have been submitted for publication to the ASME Journal of Mechanical Design.

Does this highlight represent potentially transformative research?*If so, please explain why. For more information, see* *Report to Congress: Transformative Research at the National Science Foundation, April 16, 2008* *and* *Important Notice 130: Transformative Research*

No

SBE/SMA 2010

Program Officer: Julia Lane

NSF Award Numbers:

0738058

Award Title:	MOD: Stimulating Creative Insight - A Cohesive Model of Design Innovation Across Individuals, Groups and Computer Agents
Start Date:	01/01/2008
Expires:	12/31/2010
Awarded Amount to Date:	$213,503
PI:	Jonathan Cagan, cagan@cmu.edu
Institution Name:	Carnegie-Mellon University
State Code:	PA
PE Codes:	7626

NSF Contract Numbers:

Submitted on 02/13/2010 by Julia I. Lane
SMA: Approved 05/13/2010 by Lisa L. Jones
SBE: Approved 05/13/2010 by Lisa L. Jones

Superstar Extinction

Highlight ID: 20617, Version: AC/GPA

Superstars

Credit:
http://commons.wikimedia.org/wiki/File:Antennae_Galaxies.jpg

Image Provided by: jlane@nsf.gov

The production of ideas is central to modern theories of economic growth. Yet the creative process remains a black box for economists. How do innovators actually generate new ideas? Increasingly, discoveries result from the voluntary sharing of knowledge through collaboration, rather than individual efforts. The growth of scientific collaboration has important implications for the optimal allocation of public R&D funds, the apportionment of credit amongst scientists, the formation of scientific reputations, and ultimately the design of research incentives that foster innovation and continued economic growth. Yet, we know surprisingly little about the role of collaboration among peers as a mechanism to spur the creation of new technological or scientific knowledge.

Axoulay and Graff-Zivin examine the impact of collaboration by using quasi-experimental variation to study change in the structure of coauthorship networks induced by the premature and sudden death of superstar" scientists.
They use a large, comprehensive, longitudinal, matched employee-employer database pertaining to 230,000 faculty members in all U.S. medical schools between 1975 and 2006 as well as a variety of sophisticated techniques, They find that the death of a superstar, uperstar extinction, results in a 5 to 8% decrease in the quality-adjusted publication output of coauthors.

They attribute this decrease to the loss of an irreplaceable source of ideas. The authors find that coauthors proximate to the star in intellectual space experience a sharper decline in output, relative to coauthors who work on less related topics.

In sum, these results paint a picture of an invisible college of coauthors bound together by interests in a fairly specific scientific area, which suffers a permanent and reverberating intellectual loss when it loses its star.

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Primary Strategic Outcome Goal: Discovery

- Social, Behavioral, and Economic Research

Secondary Strategic Outcome Goals:

What is the intellectual merit of this activity?
The approach overcomes many conceptual and empirical challenges inherent to this line of inquiry. Individual-level data on the contributors to a particular innovation are generally unavailable. Furthermore, the formation of collaborative teams is the outcome of a purposeful matching process, making it difficult to uncover causal e ects. The study design overcomes these challenges

What are the broader impacts of this activity?
Merit Review Broader Impacts Criterion: Representative Activities, July 2007

- *What may be the benefits of the proposed activity to society?*
- *Will the results be disseminated broadly to enhance scientific and technological understanding?*

There are large public subsidies for biomedical research in the United States, and much biomedical innovation is science-based. This finding about the importance of scientific collaboration has important implications for the optimal allocation of public R&D funds, the apportionment of credit amongst scientists, the formation of scientific reputations, and ultimately the design of research incentives that foster innovation and continued economic growth.

The paper is forthcoming in the Quarterly Journal of Economics

Does this highlight represent potentially transformative research?*If so, please explain why. For more information, see Report to Congress: Transformative Research at the National Science Foundation, April 16, 2008 and Important Notice 130: Transformative Research*

No

SBE/SMA 2010

Program Officer: Julia Lane

NSF Award Numbers:

0738142

Award Title:	MOD: Estimating the Effect of Exposure to Superstar Scientists: Evidence from Academia and the Biopharmaceutical Sector
Start Date:	12/01/2007
Expires:	11/30/2010

Awarded Amount to Date:	$429,861
PI:	Joshua Graff Zivin, jgraffzivin@ucsd.edu
Institution Name:	National Bureau of Economic Research Inc
State Code:	MA
PE Codes:	7626

NSF Contract Numbers:

Submitted on 02/13/2010 by Julia I. Lane
SMA: Approved 05/13/2010 by Lisa L. Jones
SBE: Approved 05/13/2010 by Lisa L. Jones

Technology Diffusion

Highlight ID: 20619, Version: AC/GPA

Most cross-country differences in per capita economic output are due to differences in technology rather than the level of inputs. But are these differences due to differences in the range of technologies used, or the efficiency with which the technologies are operated?

Diego Comin and Barth Hobijn examine data for 166 countries and 15 technologies from 1820 to 2003 to examine these questions. They find that cross-country differences in the timing of adoption of new technologies seem to account for at least a quarter of per capita income disparities. They also find that there are substantial lags in the adoption of new technologies: the average is about 47 years. These lags vary substantially both across countries and across technologies: the standard deviation of the lags is 39 years. However, the average adoption lag is declining over time. They also find that the growth "miracles" of Japan and East Asia coincided with a reduction of the technology adoption lags in these countries. The poor economic performance of sub-Saharan Africa is consistent with long lags of technology adoption.

These results support the idea that the implementation of policies that reduce adoption lags may be an important way to stimulate economic growth.

Primary Strategic Outcome Goal: Discovery

- Social, Behavioral, and Economic Research

Secondary Strategic Outcome Goals:

What is the intellectual merit of this activity?
One of the critical determinants of the market value of an innovation is its adoption path. Technologies that are adopted intensively have a higher market value than those that are not. Given the enormous crosscountry variation that exists in the intensity of technology adoption, research shows that the effect of adoption on the value of an innovation is important. Of course, the dynamics of technology adoption are also endogenous. Therefore, to explore accurately the role of various science and technology policies on innovation activity there is a need for a theory that integrates the adoption and innovation decisions in a unified framework. The framework developed in this study accomplishes this in a tractable way.

What are the broader impacts of this activity?
Merit Review Broader Impacts Criterion: Representative Activities, July 2007

- *What may be the benefits of the proposed activity to society?*
- *To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?*
- *Will the results be disseminated broadly to enhance scientific and technological understanding?*

There are several research and policy spillovers from this study. First, the methodology presented can beused by other researchers--in economics and other disciplines--that want to model innovation and/or technology adoption and diffusion. Second, the specific predictions from the normative exercise can be used to conduct science and innovation policy in the U.S. and in the rest of OECD countries. Third, the models developed in this study will be incorporated in syllabi designed by the researchers for a second year graduate courses. The insights will be quite intuitive and can be taught at the advanced undergraduate level. Finally, various research assistants are trained, both in dynamic macroeconomic theory and in applied macroeconomics.

The results are forthcoming in the American Economic Review

Does this highlight represent potentially transformative research?*If so, please explain why. For more information, see* *Report to Congress: Transformative Research at the National Science Foundation, April 16, 2008* *and* *Important Notice 130: Transformative Research*

No

SBE/SMA 2010

Program Officer: Julia Lane

NSF Award Numbers:

0738101

Award Title:	MOD: Innovation and Technology Implementation: Theory and Policy Implications
Start Date:	06/01/2008
Expires:	05/31/2011
Awarded Amount to Date:	$255,587
PI:	Diego Comin, diego.comin@nyu.edu
Institution Name:	National Bureau of Economic Research Inc

State Code: MA

PE Codes: 7626

NSF Contract Numbers:

Submitted on 02/13/2010 by Julia I. Lane
SMA: Approved 05/10/2010 by Lisa L. Jones
SBE: Approved 05/10/2010 by Lisa L. Jones

The Muse and the Masses

Highlight ID: 20621, Version: AC/GPA

The Organization for Economic Cooperation and Development's innovation agenda calls for policies that "enhance investment in the creation and application of new knowledge and new technologies"(p#8). Yet such policies need to be informed by how much of creativity is "inspiration"and how much is "perspiration". Todd Thrash's recent research begins to quantify the relative importance of each. He finds consistent evidence of the distinctiveness of the inspiration-creativity relation. In particular, he finds that to be inspired to create, one must be open to new ideas as well as motivationally responsive to those ideas as reward cues.

This research advances basic knowledge about the process through which insights are translated into products and solutions. The research provides evidence that inspiration predicts creativity (in a product) because it is a response to creativity (in a seminal idea) and mediates its transmission.The importance of the contribution is substantial. Although scientists, inventors, writers, and other creators have attested to the importance of inspiration in the creative process, creativity researchers have generally dismissed the concept of inspiration, arguing that ascription of creative insight to the intervention of a supernatural source ("muse") is outmoded myth.

Thrash's research reconciles creators' accounts of inspiration with contemporary science, by showing that inspiration is an effect of creative insight, not its cause.

Primary Strategic Outcome Goal: Discovery

- Social, Behavioral, and Economic Research

Secondary Strategic Outcome Goals:

Hesiod and the Muse

Credit: http://en.wikipedia.org/wiki/File:Hesiod_and_the_Muse.jpg

Image Provided by: jlane@nsf.gov

What is the intellectual merit of this activity?
This research fills an important gap in the research literature. Creativity researchers have made considerable progress in identifying the cognitive, neurological, and contextual origins of creative insight (thus debunking the notion of Muse) but have largely ignored the state of inspiration that promotes the translation of creative insights into creative products. This oversight is striking, because the failure to translate creative ideas into tangible products is likely to be among the most important obstacles to innovation.

What are the broader impacts of this activity?
Merit Review Broader Impacts Criterion: Representative Activities, July 2007

- *What may be the benefits of the proposed activity to society?*
- *How well does the activity advance discovery and understanding while promoting teaching, training, and learning?*
- *Will the results be disseminated broadly to enhance scientific and technological understanding?*

This project has important impacts beyond advancing the motivation, inspiration, and creativity research literatures. Dissemination includes research articles, book chapters, and conference presentations. An additional impact includes the development of tools for the assessment of inspiration, known to be predictive of creativity, productivity, and efficiency, and made available for use in the workplace and in educational settings. Finally, the models equip policy makers and others concerned with societal adaptation to changing physical and sociopolitical environments to understand the processes through which innovative and transformative ideas are translated into concrete products and solutions.

The research is forthcoming in the Journal of Personality and Social Psychology

Does this highlight represent potentially transformative research?*If so, please explain why. For more information, see* *Report to Congress: Transformative Research at the National Science Foundation, April 16, 2008* *and* *Important Notice 130: Transformative Research*

No

SBE/SMA 2010

Program Officer: Julia Lane

NSF Award Numbers:

0830366

Award Title:	MOD - Inspiration as Transmission of Creative Insight
Start Date:	01/01/2009
Expires:	12/31/2011
Awarded Amount to Date:	$376,986
PI:	Todd Thrash, tmthra@wm.edu
Institution Name:	College of William and Mary
State Code:	VA
PE Codes:	7626

NSF Contract Numbers:

Submitted on 02/13/2010 by Julia I. Lane
SMA: Approved 05/10/2010 by Lisa L. Jones
SBE: Approved 05/10/2010 by Lisa L. Jones

Mapping Science

Highlight ID: 20622, Version: AC/GPA

Understanding the multidisciplinary influences on scientifc fields is an important precursor to making funding decisions that advance them. In a recent publication, researchers Alan Porter and Jan Youtie advance understanding of the nanotechnology field by using data from the Science Citation Index, which has a database of citations on about 6,650 journals, as well as metrics and maps. They examine two questions: how broadly does the nanoliterature engage with the rest of the literature; and to what extent does the nanoliterature integrate knowledge from multiple disciplines?

One of their findings is that nanoliterature engages broadly, but that six subject categories dominate both the original nanopapers and the cited references: multidisciplinary materials science, applied physics, physical chemistry, condensed matter physics, nanoscience and nanotechnology, and multidisciplinary chemistry. Each of these subject categories contained 10% or more of the original papers, and was cited by 39% or more of them. Another finding is that nanoresearch is concentrated in the macrodisciplines of materials science and chemistry, and researchers in the field tend to cite work in neighboring fields more than work in more distant fields.

Primary Strategic Outcome Goal: Discovery

- Social, Behavioral, and Economic Research

Secondary Strategic Outcome Goals:

What is the intellectual merit of this activity?
The project generates analytical algorithms for indicators of interdisciplinarity. It also seeks to visually depict knowledge interchanges among areas of research activity. Such science maps can help identify and characterize focused areas of research--domains-- that are sources of knowledge used by other domains. They can also show the extent of intellectual and social networking among both domains and contributing institutions.

What are the broader impacts of this activity?
Merit Review Broader Impacts Criterion: Representative Activities, July 2007

- *What may be the benefits of the proposed activity to society?*
- *Will the results be disseminated broadly to enhance scientific and technological understanding?*

These tools better enable scientists, science managers, and Federal science and regulatory agencies to gauge and track cross-domain knowledge transfers.

The results have been presented at an international workshop on measuring interdisciplinarity in Brazil, and hte researchers have also hosted an international workshop on the Philosophy of Interdisciplinarity. The research has been highlighted in Science Watch http://sciencewatch.com/dr/fbp/2009/09decfbp/09decfbpLeydET/ and has been published in Nature Nanotechnology

Does this highlight represent potentially transformative research?*If so, please explain why. For more information, see* *Report to Congress: Transformative Research at the National Science Foundation, April 16, 2008* *and* *Important Notice 130: Transformative Research*

No

SBE/SMA 2010

Program Officer: Julia Lane

NSF Award Numbers:

0830207

Award Title:	TLS- Measuring and Tracking Research Knowledge Integration
Start Date:	09/15/2008
Expires:	08/31/2011
Awarded Amount to Date:	$402,530
PI:	Alan Porter, alan.porter@isye.gatech.edu
Institution Name:	GA Tech Research Corporation - GA Institute of Technology
State Code:	GA

PE Codes: 7626

NSF Contract Numbers:

Submitted on 02/13/2010 by Julia I. Lane
SMA: Approved 05/10/2010 by Lisa L. Jones
SBE: Approved 05/10/2010 by Lisa L. Jones

Federalism and Technological Change in Blood Products

Highlight ID: 20949, Version: AC/GPA

Why are some countries better at technological innovation than others? Many observers point to the advantages of government decentralization for science and technology (S&T) competitiveness . Decentralization allows local officials to tailor support for research and development (R&D) to local conditions in response to competition from other cities and states for high-tech business investment and top researchers. But other observers argue that centralized government is better for R&D because it is better at reducing transaction costs and coordinating disparate S&T actors around common problems. Still others contend that government structure has no significant effect on national S&T performance. Research by Mark Z. Taylor (Georgia Institute of Technology) resolves these contradictions, posits new hypotheses, and highlights sources of omitted variable bias which have important implications for innovation research. It does so by using comparative case studies across five countries of innovation and diffusion of two blood technologies (ELISA blood tests and heat treatment) in response to the threat to the blood supply posed by HIV during the 1980s. These case studies show that overall political decentralization, rather than federalism alone, aids technological progress by allowing its supporters to "venue-shop" around political resistance. However, it appears that political decentralization may have a positive effect on technological diffusion, but a far weaker effect on innovation. Thus prior research which conflates these two effects should be revisited.

Randall Tobias, U.S. Global AIDS Coordinator, gets publicly tested for HIV/AIDS in Ethiopia in an effort to reduce the stigma about getting tested.

Credit: United States Department of State

Image Provided by: jthornhi@nsf.gov

Primary Strategic Outcome Goal: Discovery

- Social, Behavioral, and Economic Research

Secondary Strategic Outcome Goals:

What is the intellectual merit of this activity?

This article investigates the effects of political decentralization on the progress of two health care technologies. Previous studies have examined the effects of federalism on health care finance, health care reform, and health policy innovation. The purpose of this article is to extend this research program to study the linkages between federalism and technological change. Health care scholars already recognize the political nature of technology, and have examined the effects of particular policies, business strategies, and organizational factors on medical technological innovation. However these studies often neglect the fact that firms, regulators, policymakers, etc. all act within a broader institutional context, that of government structure. Indeed, since many innovation studies examine technological change only within a single country, they can miss the effects of different government structures which might turn up in a cross-country comparison such as the one conducted here.

What are the broader impacts of this activity?
Merit Review Broader Impacts Criterion: Representative Activities, July 2007

- *Will the results be disseminated broadly to enhance scientific and technological understanding?*

This research helps to explain why otherwise "good" policies and institutions fail to deliver scientific and technological progress. It informs the innovation debates taking place within a variety of disciplines (economics, political science, business, industry studies), each of which tends to omit analysis of the distributive politics behind innovation policies and institutions (or at least lacks a general model of these politics). It also informs the policy process. It identifies the conditions under which certain policy designs might be more or less likely to be passed and properly implemented by government. This can aid strategies for achieving more widespread political support for SIPs and their implementation, and thereby help policymakers deliver more effective SIPs. This article is being disseminated online, in a well-tracked peer-review journal, as well as on the author's website and in past conferences.

Does this highlight represent potentially transformative research?*If so, please explain why. For more information, see Report to Congress: Transformative Research at the National Science Foundation, April 16, 2008 and Important Notice 130: Transformative Research*

Yes

Most innovation research takes support for science and technology as given, and then asks which policies can best achieve the nation's science and technology goals. In contrast, this article problematizes support for science and technology. That is, it acknowledges that technological change creates political and economic winners and losers within society. It then attempts to model the behavior of these winning and losing interest-groups in regards to Science and Innovation Policy (SIP). History shows that the losers will fight to obstruct, co-opt, or alter otherwise "good" policies that promote science and innovation. Thus, understanding how and why these fights evolve is essential for understanding why some countries are better at science and technological change than others. Put differently, what this research contributes, that previous work has not, is a better understanding of how and why political resistance to technological change arises, and the conditions under which it can affect science, technology, and innovation policies and their outcomes.

SBE/SMA 2010

Program Officer: Julia Lane

NSF Award Numbers:

0829546

Award Title:	MOD: A Political-Economic Model of Opposition/Support for Science and Innovation Policies
Start Date:	12/15/2008
Expires:	11/30/2010
Awarded Amount to Date:	$57,605
PI:	Mark Taylor, mzak@gatech.edu
Institution Name:	GA Tech Research Corporation - GA Institute of Technology
State Code:	GA
PE Codes:	7626

NSF Contract Numbers:

Submitted on 02/22/2010 by Jennifer L. Thornhill
SMA: Approved 05/10/2010 by Lisa L. Jones
SBE: Approved 05/10/2010 by Lisa L. Jones

Understanding and preventing mass epidemics

Highlight ID: 21439, Version: AC/GPA

The National Science Foundation's Human Social Dynamic (HSD) program supports numerous grants in the field of epidemiology, the study of factors affecting health and illness. NSF funding in this area has allowed researchers to track disease, identify risk factors, evaluate response networks, and model the spread of infection. The outbreak of H1N1 Influenza gave grantees the unique opportunity to study a global pandemic as it happened, providing invaluable data in the field of epidemiology.

Researchers at Columbia and Wildlife INC investigated the spread of H1N1 throughout Southern and Central America. Their research indicated that GDP, rates of travel, and healthcare funding were all accurate predictors of H1N1 exposure levels. Anomalies in reporting lead researchers to hypothesize that countries lacking healthcare funding might not be accurately reporting exposure levels. Research suggests that increasing healthcare expenditures in countries with poor reporting and high levels of international travel would greatly help to track and curb the spread of global pandemics, like H1N1.

National Science Foundation sponsored research is also investigating epidemics of the past to better understand the spread of mass pandemics in the present. The flu pandemic of 1918 caused numerous waves of infection, and researchers at the Brookings institute believe they have a model which can explain why. Pandemics not only spread infection, but also spread fear. Individuals suffering from fear during a pandemic remove themselves from the population of the infected, or flee from the region of infection. When an individual suffering from only fear returns to a given population, their lack of immunity can cause a second wave of pandemic. Infected individuals fleeing a given region also spatially spread a pandemic. No previous model has measured fear, flight, and infection together in order to study waves of infection.

Research also demonstrated that the majority of scientific and surveillance efforts were focused on countries where the next important emerging infectious disease is *least* likely to originate. Indentification of infectious disease hotspots based on socio-economic, environmental, and ecological factors revealed that wild-life zoonotic and vector borne infectious diseases were more likely to occur at lower latitudes where reporting efforts are low. Policy implications include shifting reporting resources towards lower latitudes where infectious diseases are more likely to appear.

Critical research targeting infectious diseases not only improves the prevention of mass epidemics, it helps towards the understanding of how the disease itself spreads. NSF sponsored research is helping to develop policy towards the prevention and understanding of infectious diseases. Limiting exposure, understanding threats, and wise investment strategies all contribute to combating deadly infectious diseases like H1N1.

Primary Strategic Outcome Goal: Discovery

- Social, Behavioral, and Economic Research

Secondary Strategic Outcome Goals:

What is the intellectual merit of this activity?

These Human Social Dynamic projects are contributing towards metrics and measures leading towards the understandings and prevention of emerging infectious disseases and epidemics. Better data collection, surveillance, and reporting methodologies are all aiding in the effort to fight pandemics on a global scale.

What are the broader impacts of this activity?
Merit Review Broader Impacts Criterion: Representative Activities, July 2007

- *What may be the benefits of the proposed activity to society?*

The benefits of these important projects are many. Firstly, better models alow global health officials to prepare for the spread of diseases such as the H1N1 Flu. More focused surveillance efforts also all for health officials and policy makers to better identify regions of risk, decreasing the threat of immerging diseases. Better data collection and metrics regarding pandemics also increases the readiness and response time of nations reacting to global outbreaks. Ultimately, on a global scale, the cost of human life will be reduced if more is understood about how pandemics spread.

Does this highlight represent potentially transformative research?*If so, please explain why. For more information, see Report to Congress: Transformative Research at the National Science Foundation, April 16, 2008 and Important Notice 130: Transformative Research*

No

SBE/SMA 2010

Program Officer: Benjamin Sakovich

NSF Award Numbers:

0826840

Award Title:	HSD: Collaborative Research: Human-Related Factors Affecting Emerging Infectious Diseases
Start Date:	10/01/2008
Expires:	03/31/2012
Awarded Amount to Date:	$231,328
PI:	Marc Levy, Marc.Levy@ciesin.columbia.edu
Institution Name:	Columbia University
State Code:	NY
PE Codes:	7318

0729262

Award Title:	Collaborative Research: Modeling Interaction Between Individual Behavior, Social Networks And Public Policy To Support Public Health Epidemiology.
Start Date:	10/01/2007
Expires:	09/30/2010
Awarded Amount to Date:	$90,000
PI:	Joshua Epstein, jepstein@brookings.edu
Institution Name:	Brookings Institution
State Code:	DC
PE Codes:	7322

0525216

Award Title:	Collaborative research: Socio-economic and environmental drivers of emerging infectious diseases
Start Date:	01/01/2006
Expires:	12/31/2006
Awarded Amount to Date:	$62,500
PI:	Peter Daszak, daszak@wildlifetrust.org
Institution Name:	Wildlife Trust, Inc.
State Code:	NY
PE Codes:	7318

NSF Contract Numbers:

Submitted on 04/13/2010 by Ben Sakovich
SMA: Approved 05/10/2010 by Lisa L. Jones
SBE: Approved 05/10/2010 by Lisa L. Jones